## PROGRAM FOR ARTERIAL SYSTEM SYNCHRONIZATION (PASS) FY13/14 CYCLE

# County Expressways - Traffic Responsive Timing Plans County of Santa Clara | Metropolitan Transportation Commission

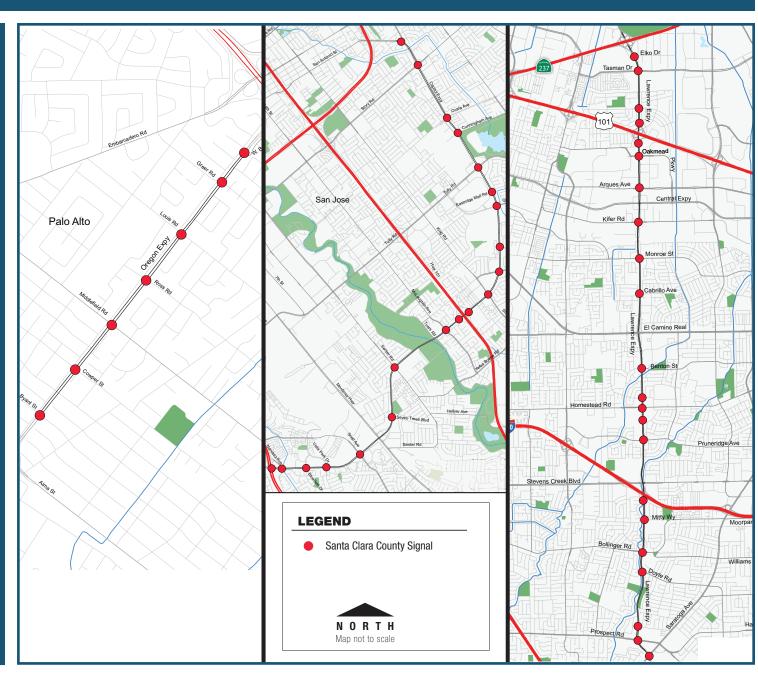
#### PROJECT OVERVIEW

The County of Santa Clara received a Program for Arterial System Synchronization (PASS) grant from the Metropolitan Transportation Commission (MTC) to develop traffic timing plans for 49 traffic signals, including 7 traffic signals on Oregon Expressway, 20 signals on Capitol Expressway, and 22 signals on Lawrence Expressway.

The goal of the project was to conduct a timing analysis, and to develop and implement new weekday signal coordination plans and traffic responsive timing at the traffic signals on Oregon Expressway, and update the traffic responsive timing for the weekend and weekday peak periods on Capitol Expressway and Lawrence Expressway.

Traffic responsive timing is a method of providing signal coordination by automatically deploying pre-set signal timing plans based on actual traffic volumes along the corridor, as opposed to plans being deployed at specific times during the day. Traffic volumes and loop detector data are continuously measured along the corridor and then a specific coordination plan is selected from a "bank" of plans based on the volumes.

Traffic responsive operation allows the system to select the most appropriate plan based on the actual traffic conditions and respond to



#### PROJECT OVERVIEW (CONTINUED)

daily, weekly, and monthly traffic fluctuations.

The PASS project involved the completion of the following major tasks: collect detector data and existing timing plan information; collect turning movement counts; conduct travel time surveys and delay studies along the project corridors; collect collision history; and document the analyses and findings of the project.

#### **PROJECT BENEFITS**

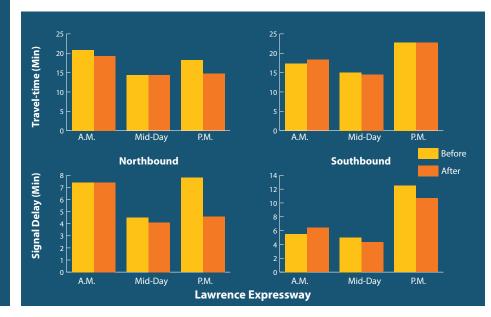
The traffic responsive operation will be in place during periods with varying volumes, such as during different times of the year when traffic is lighter (holidays or summer) or periods when traffic is heavier (during incidents on the freeway, when traffic diverts to the corridor). The use of more appropriate timing plans will result in reduced delay, vehicle emissions, and improved safety.

Existing bicycle and pedestrian timings were maintained with the traffic responsive timing. The implementation of traffic responsive timing did not have a negative impact on pedestrian and bicycle timings, and, in some cases, will even reduce the pedestrian and bicycle delay when lower cycle lengths are selected during lighter traffic periods.

Project Costs		
Consultant Costs (Basic Services/ Plans)		
Consultant Costs (Additional Plans Responsive Timing for Expressways)		
Other Project Costs (GPS Clocks, Communications equipment, etc.)		
Agency Staff Costs (Estimate)	\$25,390	
Total Costs	\$139,025	

Project Benefits					
	First Year		Lifetime (5 Years)		
Measures	Savings	Monetized Savings	Savings	Monetized Savings	
Travel Time Savings	178,710 hrs.	\$3,487,593	479,400 hrs.	\$9,355,666	
Fuel Consumption Savings	522,123 gal.	\$2,014,961	1,400,626 gal.	\$5,405,248	
ROG Emissions Reduction	1.63 tons	\$2,046	4.36 tons	\$5,487	
NOx Emissions Reduction	1.09 tons	\$19,596	2.92 tons	\$52,567	
PM2.5 Emissions Reduction	0.07 tons	\$20,741	0.18 tons	\$55,638	
CO Emissions Reduction	17.32 tons	\$1,339	46.47 tons	\$3,592	
		Total Life	time Benefits	\$14,878,199	
Overall Projec	t Benefits			Auto	
Average Decrease	in Travel Time			8%	

Overall Project Benefits	Auto
Average Decrease in Travel Time	8%
Average Speed Increase	15%
Average Fuel Savings	6%
Average Reduction in Signal Delay	21%
Average Reduction in Number of Stops	21%
Overall Benefit-Cost Ratio	107:1



#### PROJECT BENEFITS SUMMARY



Average Reduction in Auto Signal Delay: 21%

Average Reduction in Number of Stops: 21%

Auto Fuel Consumption Savings: 6% or 1,400,626 gallons





Total Emissions Reduced (ROG, NOx, PM2.5, CO): 53.93 tons

Auto Travel Time Savings: 8% or 479,400 hours



Overall Project
Benefit-cost Ratio
= 107:1



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